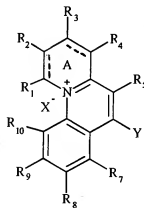


CLAIMS

1. Use of derivatives of the following general formula (I):



(I)

in which:

- the heterocycle A is aromatic or non-aromatic, it being understood that in this latter case the nitrogen atom of this heterocycle is linked by a double bond to the carbon in position 4a,

- R₁, R₂, R₃, R₄, R₅, R₇, R₈, R₉ and R₁₀, represent, independently of one another:

- . a hydrogen atom, or
- . a halogen atom, in particular a chlorine, bromine, or fluorine atom, or
- . an alkyl, alkoxy, carbonyl, oxycarbonyl or ester group, linear or branched, with approximately 1 to approximately 10 carbon atoms, these groups being if appropriate substituted, in particular by a halogen, and/or by a hydroxyl, and/or by a (primary, secondary or tertiary) amine, and/or by an aromatic and/or aliphatic ring, with approximately 5 to approximately 10 carbon atoms in the ring, these rings being themselves, if appropriate, substituted in particular by a halogen, and/or by a hydroxyl, and/or by a (primary, secondary or tertiary) amine, and/or by an alkyl, alkoxy, carbonyl, oxycarbonyl or ester group, these groups being as defined above, or
- . an aromatic or aliphatic ring, with approximately 5 to approximately 10 carbon atoms in the ring, this ring being itself, if appropriate, substituted in particular by a halogen, and/or by a hydroxyl, and/or by a (primary, secondary or

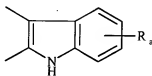
tertiary) amine, and/or by an alkyl, alkoxy, carbonyl, oxycarbonyl or ester group, these groups being as defined above, or

. an $-OR_a$ group, R_a representing a hydrogen atom, or an alkyl, carbonyl, oxycarbonyl or ester group, linear or branched, these groups being as defined above, or an aromatic or aliphatic ring, these rings being as defined above, or

. an $-NR_bR_c$ group, R_b and R_c , independently of one another, representing a hydrogen atom, an alkyl, alkoxy, carbonyl, oxycarbonyl or ester group, linear or branched, these groups being as defined above, or an aromatic or aliphatic ring, these rings being as defined above, or

. when R_1 and R_2 , and/or R_3 and R_4 , and/or R_4 and R_5 , and/or R_7 and R_8 , and/or R_8 and R_9 , and/or R_9 and R_{10} , do not represent the different atoms or groups or rings mentioned above, then R_1 in combination with R_2 , and/or R_2 in combination with R_3 , and/or R_3 in combination with R_4 , and/or R_4 in combination with R_5 , and/or R_7 in combination with R_8 , and/or R_8 in combination with R_9 , and/or R_9 in combination with R_{10} , respectively form with C_1 and C_2 , or with C_2 and C_3 , or with C_3 and C_4 , or with C_4 , C_{4a} and C_5 , or with C_7 and C_8 , or with C_8 and C_9 , or with C_9 and C_{10} , an aromatic or aliphatic ring with 5 to 10 carbon atoms, this ring being if appropriate substituted, in particular by a halogen, and/or by an alkyl, alkoxy, carbonyl, oxycarbonyl, or ester group, and/or by an aromatic or aliphatic ring, these groups or rings being as defined above, or

. when R_3 and R_4 do not represent the different atoms or groups or rings mentioned above, then R_3 in combination with R_4 forms an indole group of formula



in which R_a is as defined above,

- Y represents:

. an -OR_d group, R_d representing a hydrogen atom, or an alkyl, carbonyl, oxycarbonyl or ester group, linear or branched, these groups being as defined above, or an aromatic or aliphatic ring, these rings being as defined above, or

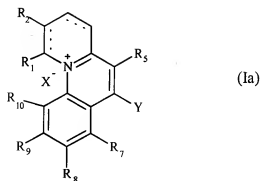
5 . an -NR_eR_f group, R_e and R_f independently of one another, representing a hydrogen atom, or an alkyl, alkoxy, carbonyl, oxycarbonyl or ester group, linear or branched, these groups being as defined above, or an aromatic or aliphatic ring, these rings being as defined above,

10 . it being understood that when R_d, or at least one of R_e or R_f, do not represent one of the different atoms or groups or rings mentioned above, then R_d, or at least one of R_e or R_f, in combination with R₅, or in combination with R₇, respectively form with C₅ and C₆, or with C₆, C_{6a} and C₇, an aromatic or aliphatic heterocycle with 5 to 10 carbon atoms, if appropriate substituted, in particular by a halogen, and/or by an alkyl, alkoxy, carbonyl, oxycarbonyl or ester group, and/or by an aromatic or aliphatic ring, these groups or rings being as defined above,

15 - X represents an atom in anionic form, such as a halogen atom, in particular a bromine or chlorine atom, or a group of atoms in anionic form, such as a perchlorate, and the nitrogen of the heterocycle A of formula (I) is in quaternary form and is linked on the one hand by a covalent bond to the carbon in position
20 11, and, on the other hand, by ionic bond to X defined above, it being understood that when R₁ and R₁₀ do not represent one of the different atoms or groups or rings mentioned above, then R₁ in combination with R₁₀ forms with C₁, the nitrogen of the heterocycle A of formula (I), C₁₁, and C₁₀, an aromatic or aliphatic heterocycle with 5 to 10 carbon atoms, if appropriate substituted, in
25 particular by a halogen, and/or by an alkyl, alkoxy, carbonyl, oxycarbonyl or ester group, and/or by an aromatic or aliphatic ring, these groups or rings being as defined above,

30 for the preparation of medicaments intended for the treatment of pathologies linked to a constriction of smooth muscle cells in tissues such as the pathologies linked to vasoconstriction phenomena within the scope of vascular disorders, in particular arterial hypertension, or the pathologies linked to bronchoconstriction phenomena within the scope of respiratory disorders, in particular asthma.

2. Use according to claim 1, of the derivatives of benzo[c] quinoliziniums of following formula (Ia):



in which:

- R₁ and R₂ represent a hydrogen atom, or form in combination with C₁ and C₂ an aromatic ring with 6 carbon atoms,

- R₅ represents a hydrogen atom, or a linear or substituted alkyl group with 1 to 10 carbon atoms, in particular a butyl group, or an ester of formula COOR' in which R' represents a linear or substituted alkyl group with 1 to 10 carbon atoms, in particular an ethyl group,

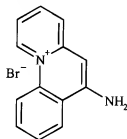
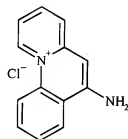
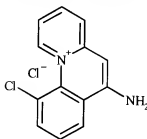
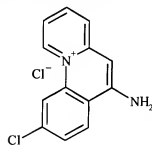
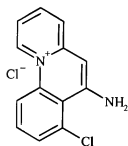
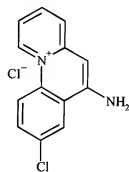
- Y represents an -OH, -SH, -NH₂, or -NHCOCH₃ group,

- R₇, R₈, R₉ and R₁₀ represent a hydrogen atom, or at least one of R₇, R₈, R₉ or R₁₀, represents a halogen atom, in particular a chlorine, bromine or fluorine atom,

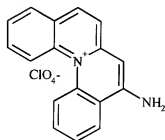
- X represents a halogen atom in anionic form, in particular a bromine Br⁻, or chlorine Cl⁻ atom, or a group of atoms in anionic form.

3. Use according to claim 1 or 2, of the derivatives of benzo[c] quinoliziniums of formula (Ia) in which Y represents an -NH₂, or -NHCOCH₃ group.

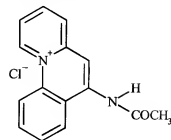
4. Use according to claim 3, of the following derivatives of benzo[c]quinoliziniums of formula (Ia):

compound 13 (MPB-01)**compound 11 (MPB-26)****compound 14 (MPB-02)****compound 15 (MPB-03)****compound 16****compound 17**

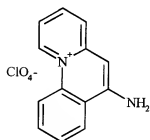
compound 22



compound 23



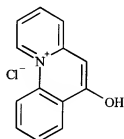
compound 24



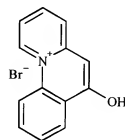
5. Use according to claim 1 or 2, of derivatives of the benzo[c]quinoliziniums of formula (Ia) in which Y represents OH.

6. Use according to claim 5, of derivatives of the benzo[c]quinoliziniums of formula (Ia) chosen from the following:

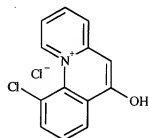
compound 12 (MPB-05)



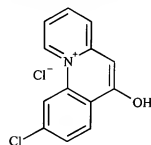
compound 18 (MPB-06)

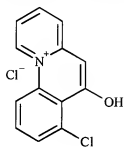
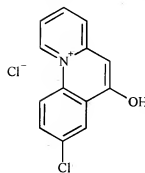
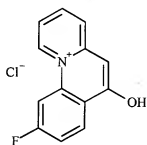
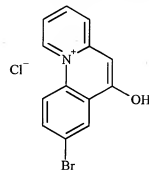
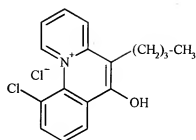
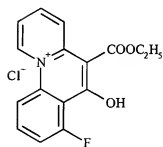
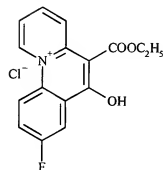


compound 19 (MPB-07)



compound 20 (MPB-08)

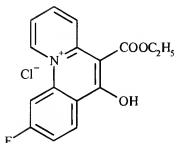


compound 21 (MPB-27)**compound 25 (MPB-30)****compound 26 (MPB-29)****compound 27 (MPB-32)****compound MPB-91****compound MPB 73****compound MPB 75**

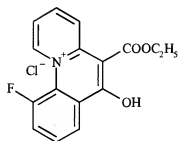
compound MPB 86

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compound MPB 77

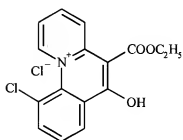


compound MPB 87

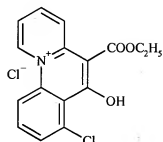
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compound MPB 88



7. Use according to claim 1 or 2, of derivatives of the benzo[c]quinoliniziniums of formula (Ia) in which Y represents SH.

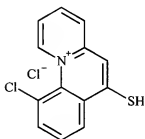
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8. Use according to claim 7, of derivatives of the benzo[c]quinoliniziniums of formula (Ia) chosen from the following:

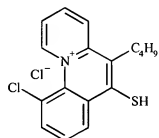
compound MPB 102

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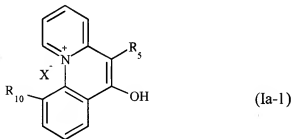
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compound MPB 103



9. Use according to claim 5, of derivatives of the following general formula (Ia-1):



in which:

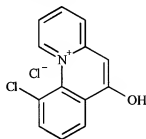
- R₅ represents a hydrogen atom, or a linear or substituted alkyl group with 1 to 10 carbon atoms, in particular a butyl group,

- R₁₀ represents a halogen atom, in particular a chlorine, bromine or fluorine atom,

- X represents a halogen atom in anionic form, in particular a bromine Br⁻ or chlorine Cl⁻ atom, or a group of atoms in anionic form, in particular a perchlorate ClO₄⁻.

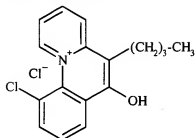
10. Use according to claim 9, of the derivative MPB-07 of following formula:

compound 19 (MPB-07)

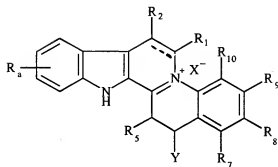


11. Use according to claim 9, of the derivative MPB-91 of following formula:

compound MPB-91



12. Use according to claim 1, of derivatives of following general formula (Ib):

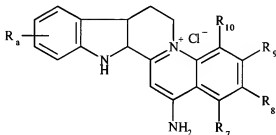


(Ib)

in which R_a , R_1 , R_2 , R_3 , R_4 , R_5 , R_6 , R_7 , R_8 , R_9 , R_{10} , X and Y are as defined in claim 1, and in particular the compounds of formula (Ib) in which:

- R_a represents a hydrogen atom,
- R_1 and R_2 represent a hydrogen atom, and there is no double bond between the two carbons carrying R_1 and R_2 ,
- R_3 represents a hydrogen atom,
- R_4 , R_5 , R_6 and R_{10} represent a hydrogen atom, or one of R_7 , R_8 , R_9 or R_{10} represents a halogen atom, in particular a chlorine, bromine or fluorine atom,
- Y represents NH_2 ,
- X represents a halogen atom, in particular a bromine, or chlorine, or fluorine atom.

13. Use according to claim 10, of derivatives of following formula (Ib-1):



(Ib-1)

and more particularly the following compounds of formula (Ib-1):

- compound G : $R_7 = \text{Cl}$, $R_8 = R_9 = R_{10} = \text{H}$,
- compound H : $R_7 = R_8 = R_9 = R_{10} = \text{H}$,
- compound I : $R_8 = \text{Cl}$, $R_7 = R_9 = R_{10} = \text{H}$,
- compound J : $R_9 = \text{Cl}$, $R_7 = R_8 = R_{10} = \text{H}$,
- compound K : $R_{10} = \text{Cl}$, $R_7 = R_8 = R_9 = \text{H}$,
- compound L : $R_9 = \text{Br}$, $R_7 = R_8 = R_{10} = \text{H}$.

14. Compounds of formula (I) as defined in claim 1 in which R_5 represents an ester of formula COOR' in which R' represents a linear or substituted alkyl group with 1 to 10 carbon atoms, in particular an ethyl group.

15. Compounds according to claim 14, of formula (Ia) as defined in claim 2, in which:

- R_1 and R_2 represent a hydrogen atom, or form in combination with C_1 and C_2 an aromatic ring with 6 carbon atoms,
- R_5 represents an ester of formula COOR' in which R' represents a linear or substituted alkyl group with 1 to 10 carbon atoms, in particular an ethyl group,
- Y represents an $-\text{OH}$, $-\text{SH}$, $-\text{NH}_2$, or $-\text{NHCOCH}_3$ group,
- R_7 , R_8 , R_9 and R_{10} represent a hydrogen atom, or at least one of R_7 , R_8 , R_9 or R_{10} represents a halogen atom, in particular a chlorine, bromine or fluorine atom,
- X represents a halogen atom in anionic form, in particular a bromine Br^- , or chlorine Cl^- atom, or a group of atoms in anionic form.

16. Compounds according to claim 14 or 15, of formula (Ia) in which R_5 represents an ester of formula COOR' in which R' represents a linear or substituted alkyl group with 1 to 10 carbon atoms, in particular an ethyl group, and Y represents an $-\text{OH}$ group.

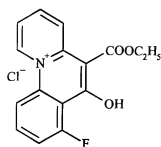
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17. Compounds according to one of claims 14 to 16, of following formulae:

compound MPB 73

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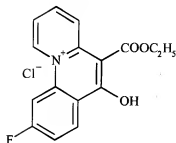
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compound MPB 86

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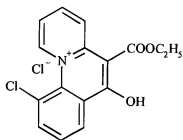
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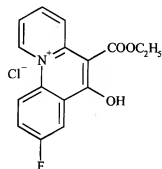
compound MPB 87

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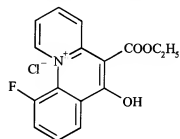
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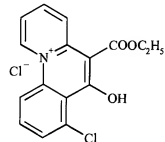
compound MPB 75



compound MPB 77



compound MPB 88



18. Compounds of formula (I) as defined in claim 1 in which Y represents

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SH .

19. Compounds according to claim 18, of formula (Ia) as defined in claim 2, in which:

- R₁ and R₂ represent a hydrogen atom, or form in combination with C₁ and C₂ an aromatic ring with 6 carbon atoms,

- R₅ represents a hydrogen atom, or a linear or substituted alkyl group with 1 to 10 carbon atoms, in particular a butyl group,

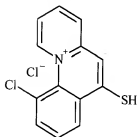
- Y represents an -SH group,

- R₇, R₈, R₉ and R₁₀ represent a hydrogen atom, or at least one of R₇, R₈, R₉ or R₁₀ represents a halogen atom, in particular a chlorine, bromine or fluorine atom,

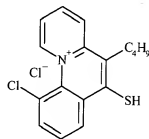
- X represents a halogen atom in anionic form, in particular a bromine Br⁻, or chlorine Cl⁻ atom, or a group of atoms in anionic form.

20. Compounds according to claim 18 or 19, of following formulae:

compound MPB 102



compound MPB 103



21. Pharmaceutical compositions comprising at least one compound defined in one of claims 14 to 20, in combination with a pharmaceutically acceptable vehicle.